Panasonic

Industrial IoT Data Analysis & Visualization Project – Kitting / Pick

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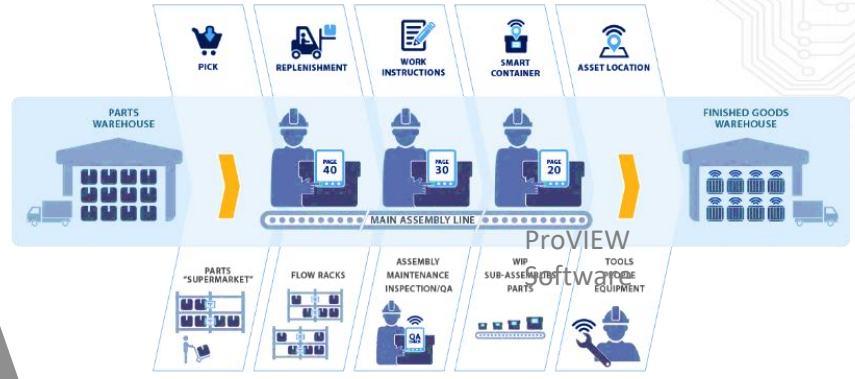
Panasonic IIoT Solutions

- **Target Market**:

  Applying Industrial IoT Solutions to Material Flow & Tracking Applications in Large Capital Goods Manufacturing Enterprises.

- **Products**:
  - ProVIEW Material Flow Software Solutions
  - Visual Tags + Active Tags + Other ProVIEW devices
  - Infrastructure: Readers and Networking Components
  - Consulting and Professional Services and Support
- **Locations**:
  - Worldwide



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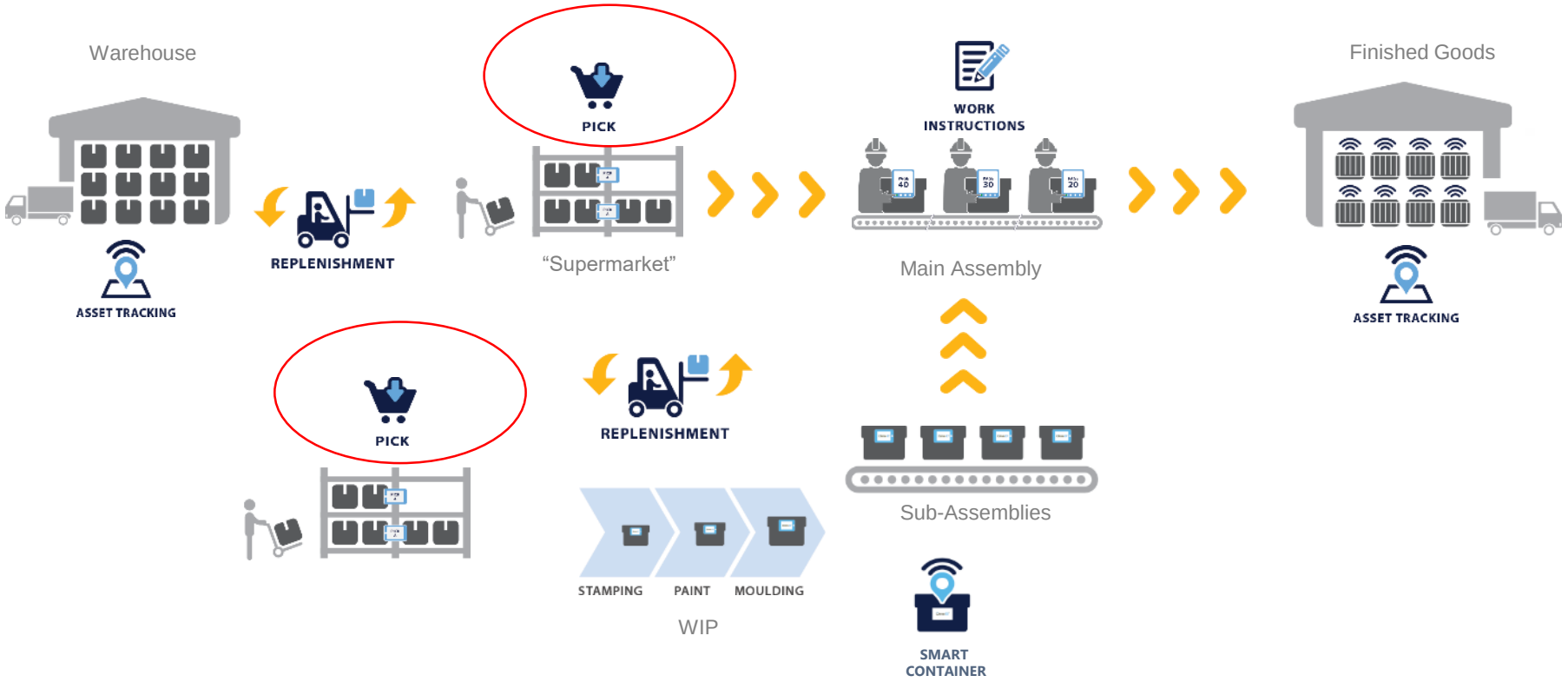
Manufacturing is Changing

- Mass Production moving to Mass Customization
  - Batch of One! Just-in-Time moving to Just-in-Sequence
- Consumers demanding Real-Time Transparency
- Faster product cycles, more variations (complexity)
- Digital Thread – Process of Design through to Consumer Digitized
- Increased Regulatory Compliance
- Track & Trace Information, Data Visualization

However in Today's Factories ~90% of all Material Flows are driven by Paper Labeling/Barcode

ProVIEW Software: Workflow Modules Supporting Common Factory Material Flows



ProVIEW is the only available solution covering 80-90% of all material flows in factories

ProVIEW PICK Benefits

13 Sites Installed

Eliminate Paper	Cost Reduction	Increase Flexibility	Improve Efficiency	Standardize Processes	Continuous Improvement
Cost Savings $60-$140k Annually	50% Labor Reduction	Setup Time 2 Weeks to 2 Hours	Pick Accuracy Approaching 99.8%	90% Reduced Training Time	Quality up 28% with Process Data

Average ROI 9 Months

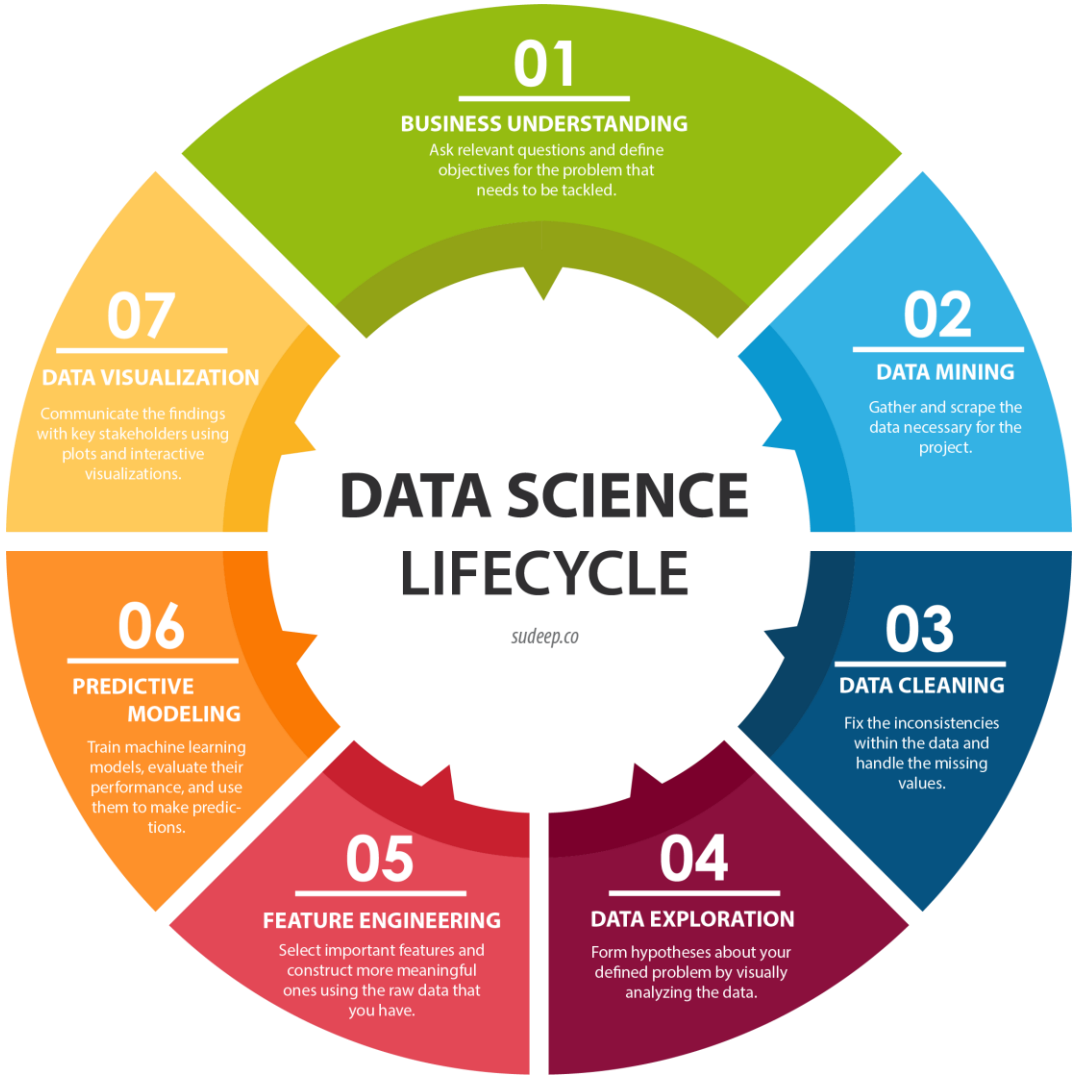
ProVIEW PICKING / KITTING VIDEO

- Customer video of Picking Process

KITTING: KEY PERFORMANCE INDICATORS (KPI)

1. Number of Completed Jobs per time interval (per day, week, month, etc)
2. Number of Failed Jobs per time interval (per day, week, month, etc)
3. Number of components picked (Total per day per zone)?
4. Pick Job completion time per time interval
5. How many picks in zone1 versus zone2?
6. Compare pick times in zone1 versus zone2
7. Average pick time per time interval - PICK RATE (day, week, month, etc)
8. Most common parts picked – Part based
9. Most frequently picked parts – Time based
10. Busiest pick zone / Slowest pick zone
11. Job-In-Queue time

TECHNICAL INFORMATION



CAPSTONE PROJECT GOALS

- Determine the correct KPI's
  - Discuss and finalize the Data Dictionary for the variables needed
- Raw Data conversion to Staging based on KPI
  - R, Python
- Data analysis (Python, R)
- Display Analytics on Tableau for each KPI
  - Data collection
  - Data preparation
  - Exploratory analysis
  - Statistical testing – Ex: Morning PICK performance v/s Afternoon
  - Presentable to end customer
- Nice To Have: Predictive Analysis